action and no electric current, though the water was there, so that contact with the water did nothing; the water and acid were moved and mixed together by means of the end of the wire *i;* in a few moments proper chemical action came on, the iron evolving nitrous gas at the place of its action, and at the same time acquiring a positive condition at that part, and producing a powerful electric current.

1028. *When the chemical action which either has or could have produced a current in one direction is reversed or undone., the current is reversed (or undone) also.*

1029. This is a principle or result which most strikingly confirms the chemical theory of voltaic excitement, and is illustrated by many important facts. Volta in the year 1802 [1] showed that crystallised *oxide of manganese* was highly negative to zinc and similar metals, giving, according to his theory, electricity to the zinc at the point of contact. Becquerel worked carefully at this subject in 1835^ and came to the con-elusion, but reservedly expressed, that the facts were favourable to the theory of contact. In the following year De la Rive examined the subject,[3] and shows, to my satisfaction at least, that the peroxide is at the time undergoing chemical change and losing oxygen, a change perfectly in accordance with the direction of the current it produces.

1030. The peroxide associated with platinum in the green* nitrous acid originates a current, and is negative to the platinum,. at the same time giving up oxygen and converting the nitrous-acid into nitric acid, a change easily shown by a common chemical experiment. In nitric acid the oxide is negative[1].to-platinum, but its negative state is much increased if a little-alcohol be added to the acid, that body assisting in the reduc-tion of the oxide. When associated with platinum in solution of potash, the addition of a little alcohol singularly favours the-increase of the current for the same reason. When the per-oxide and platinum are associated with solution of sulphuret of potassium, the peroxide, as might have been expected, is strongly negative.

1031. In 1835 M. Muncke[4] observed the striking power of peroxide of lead to produce phenomena

like those of the per-
oxide of manganese, and these M. de la
Rive in 1836 immedi-
ately referred to corresponding chemical
changes .[5] M. Schoenbein

[1] *Annales de Chimie,* 1802, xl. 224. [2] *Ibid.* 1835, Ix. 164, 171.
[3] *Ibid.* 1836, Ixi. 40; and *Bibliotheque Umverselle,* 1836, i. 152, 158.
* *Bibliothlque Umverselle,* 1836, i. 160. [6] *Ibid.* 1836, i., 154 162.

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